

# NIDA AIDS Research Program Update: High Priority Research Areas

National Advisory Council on Drug Abuse

September 5, 2019

Redonna K. Chandler, Ph.D.

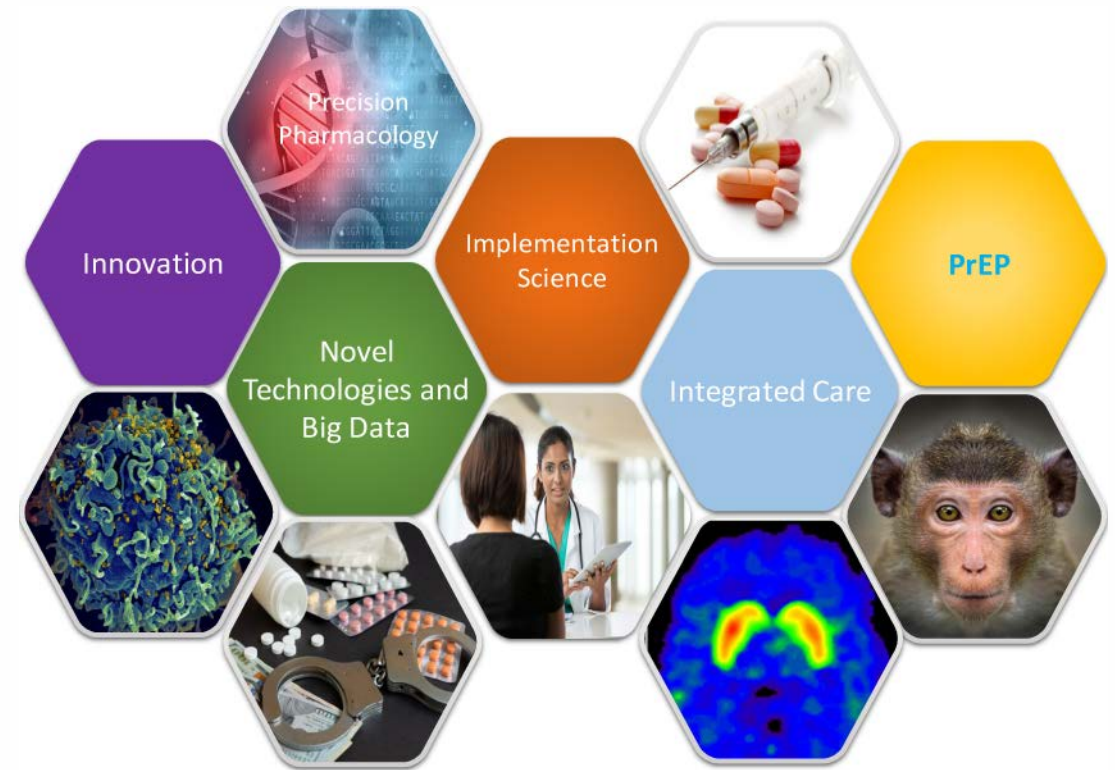
Director, AIDS Research Program & HEALing Communities Study

National Institute on Drug Abuse



# NIDA's HIV/AIDS Research Portfolio

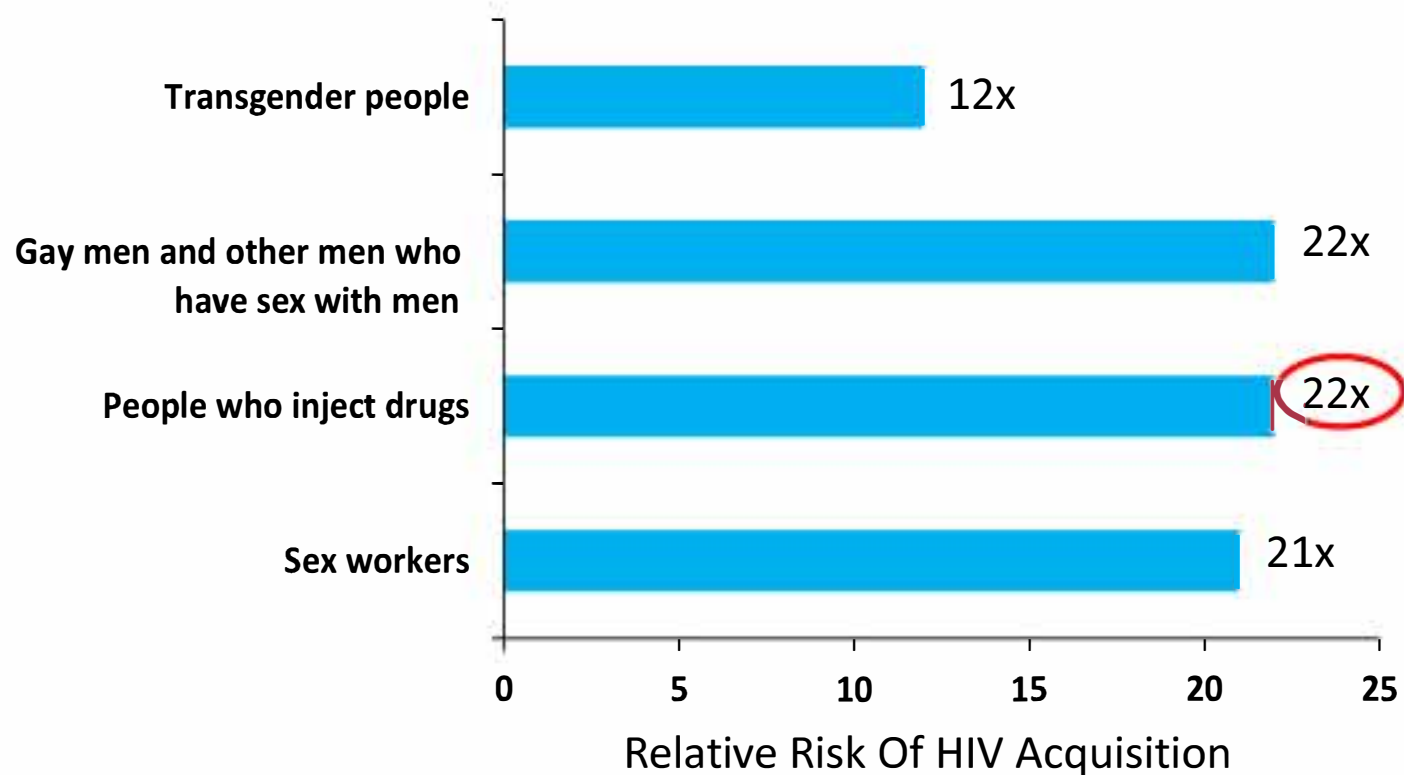
- Addresses the intersection of drug use and HIV
- Crosses the scientific spectrum:
  - Basic research
  - Epidemiology
  - Prevention
  - Treatment
  - Implementation
- Embedded in every division and center including IRP, CTN, OTIPI
- Encompasses diverse populations and settings



# Development of High Priority Research Areas September 2018-Present

- Built on recommendations of scientific experts participating in series of meetings in fall of 2018 (<https://www.drugabuse.gov/news-events/meetings-events/2018/11/nida-aids-research-program-strategic-planning-workshops>)
- Includes feedback from key stakeholders responding to a Request for Information issued January 2019 ([NOT-DA-19-015](#))
- Align with NIH priorities for HIV and HIV-related research

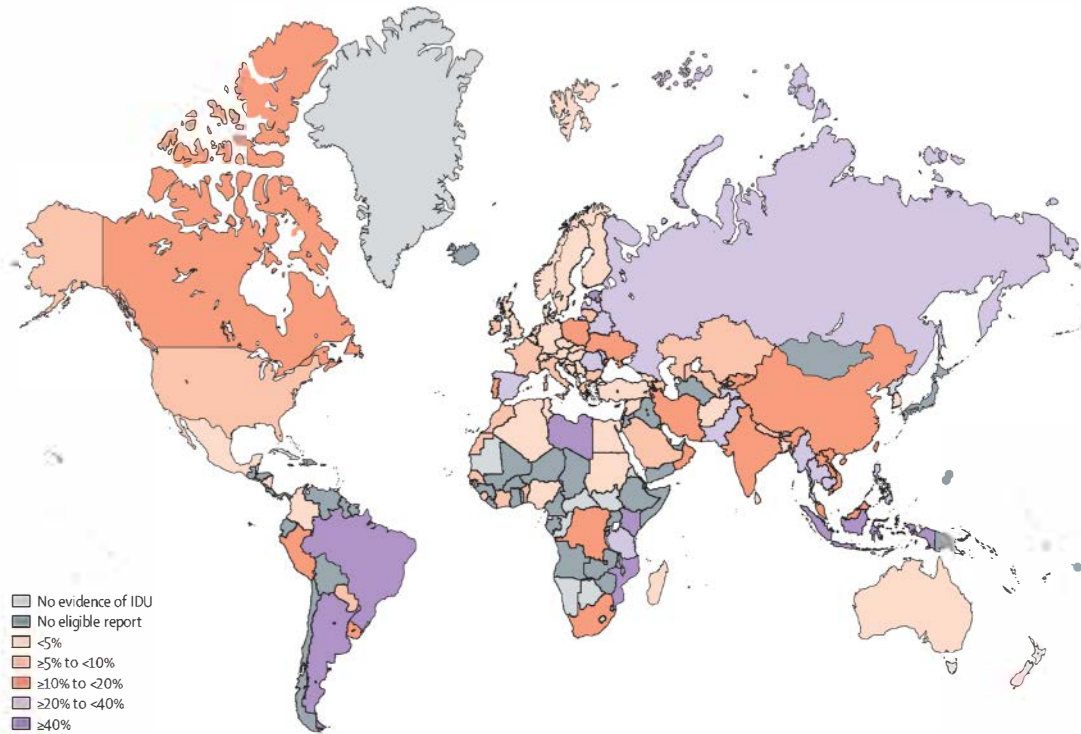
# Relative Risk of HIV Acquisition Globally 2018



*Source: UNAIDS special analyses using Spectrum 2019 results and 2019 Global AIDS Monitoring submissions, supplemented by data from published literature.*

# Estimated HIV Prevalence Among People Who Inject Drugs (PWID)

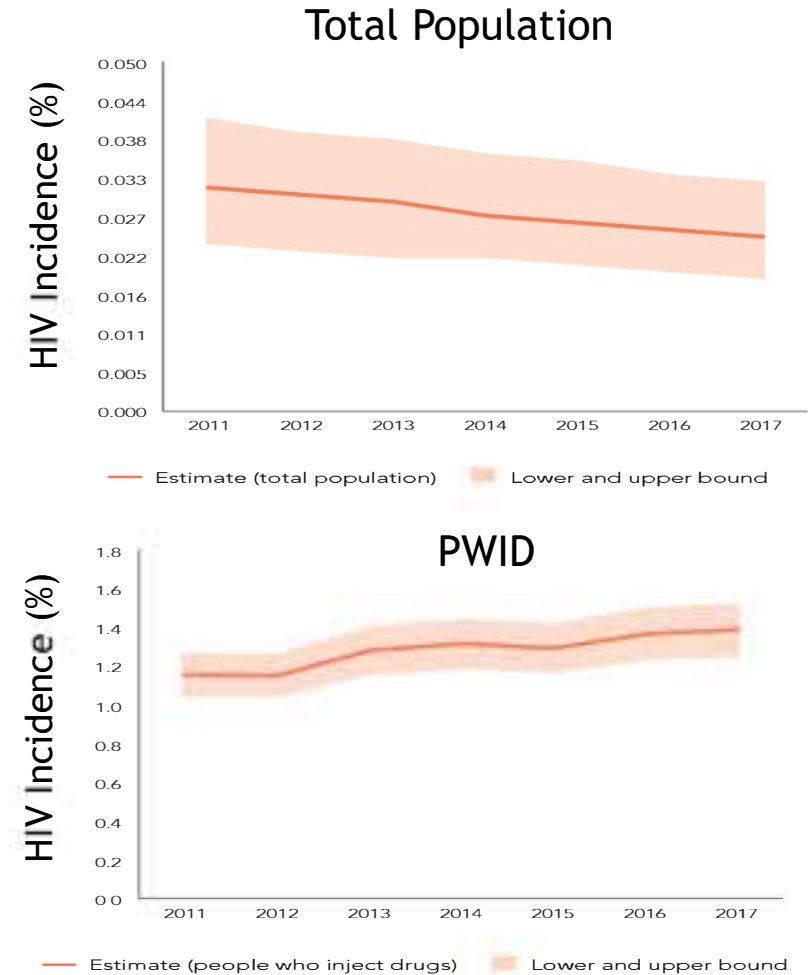
# Globally HIV Appears to be Rising Among PWID



- Globally, **13M** PWID of whom **1.7M** are HIV+
- Globally, **10%** of HIV infections are from IDU
- HIV Incidence in PWID: **1.2%** in 2011; **1.4%** in 2017
- PWID living with HIV (%): **11.4%** in 2011; **12.5%** in 2016

Source: *Lancet Glob Health*. 2017 Dec; 5(12): e1192-e1207.

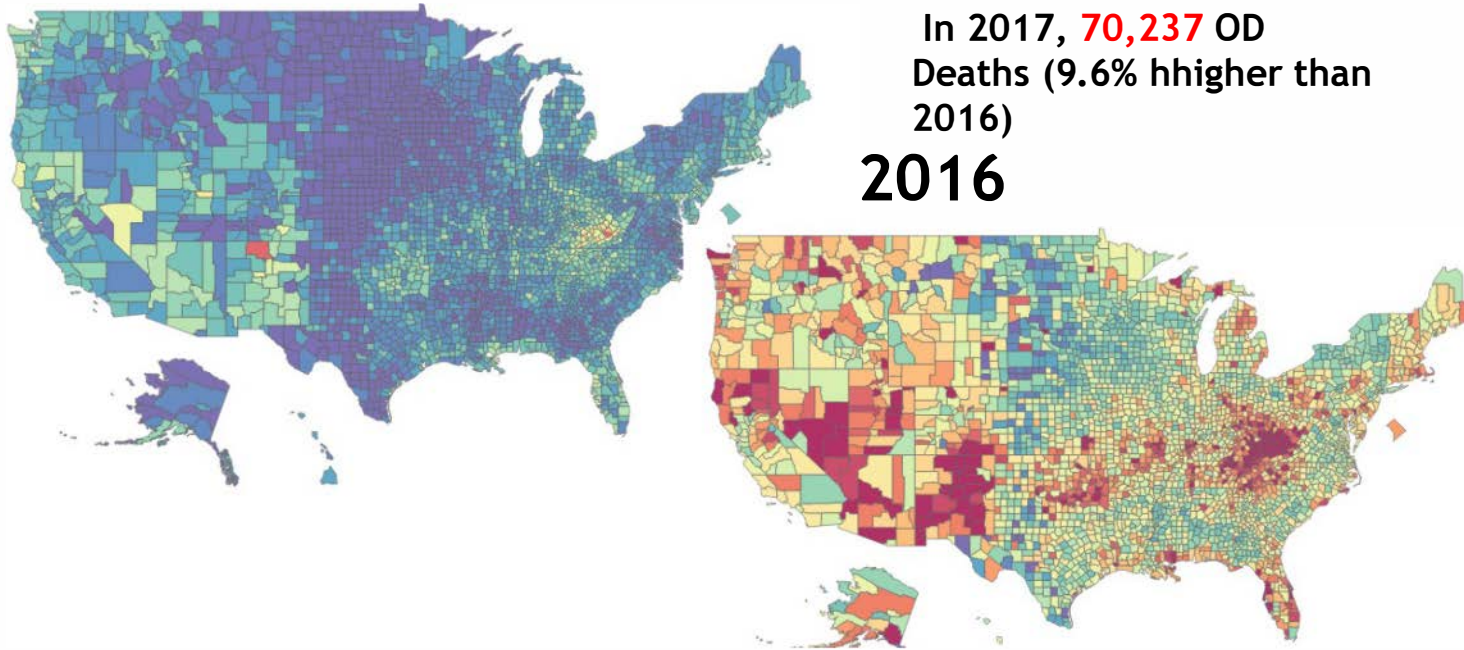
WHO: <https://www.who.int/hiv/topics/idu/en/>



Source: Volkow, IAS, 2019, UNAIDS 2018

# US Opioid Epidemic has Increased Overdose Deaths and Prevalence of PWID

## 1999 Overdose Deaths

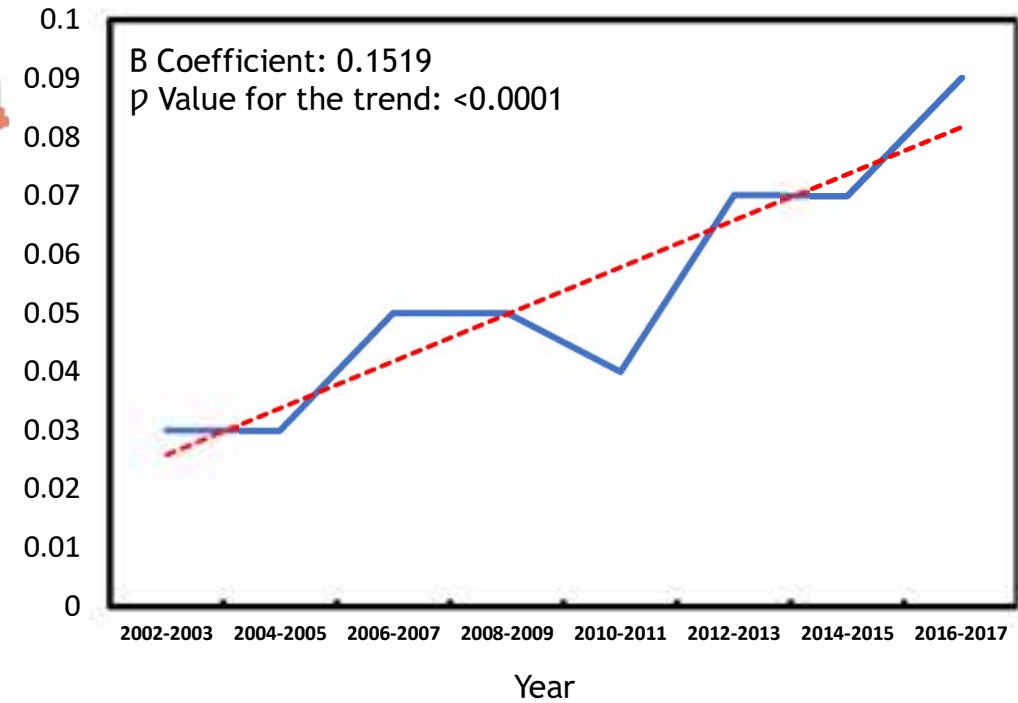


Legend for estimated age-adjusted death rate (per 100,000 population)



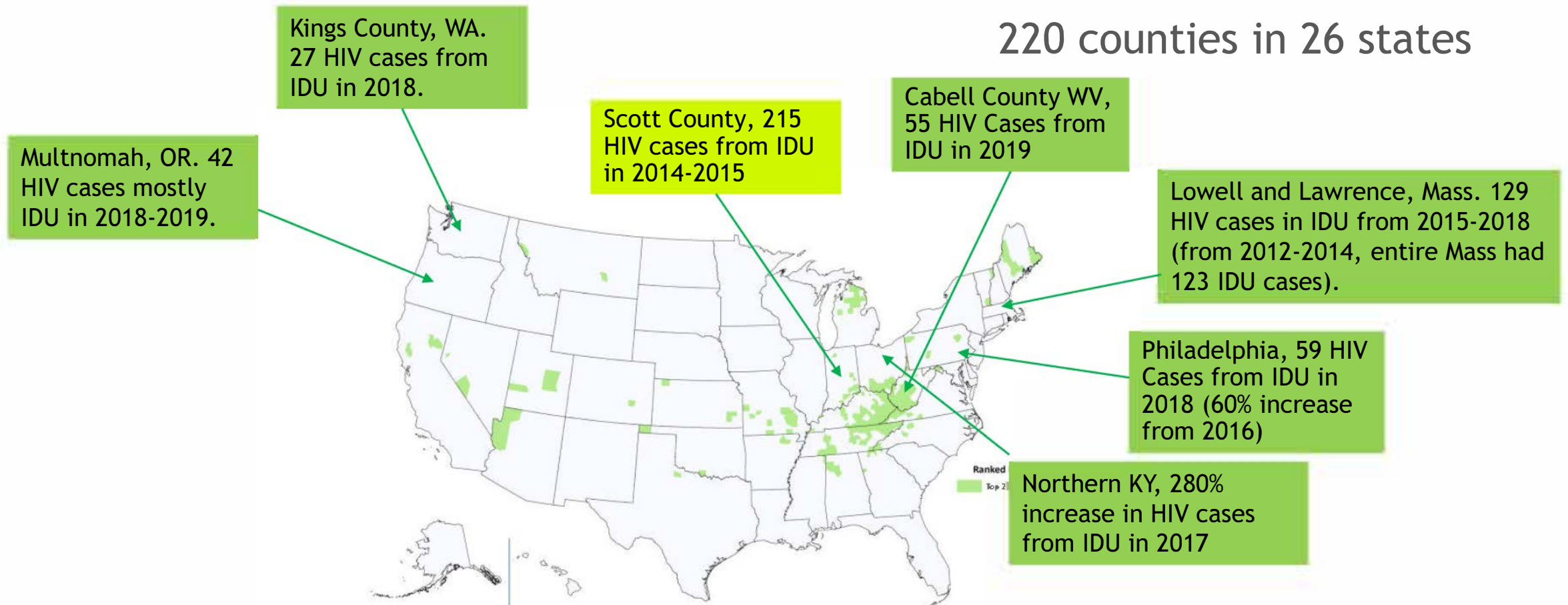
## Prevalence of IDU in US has increased in past 15 years

Heroin IDU in US (12 or older, past-month use)



# HIV Can Spread Rapidly Among People Who Inject Drugs

## U.S. counties vulnerable to rapid spread of IDU-associated HIV



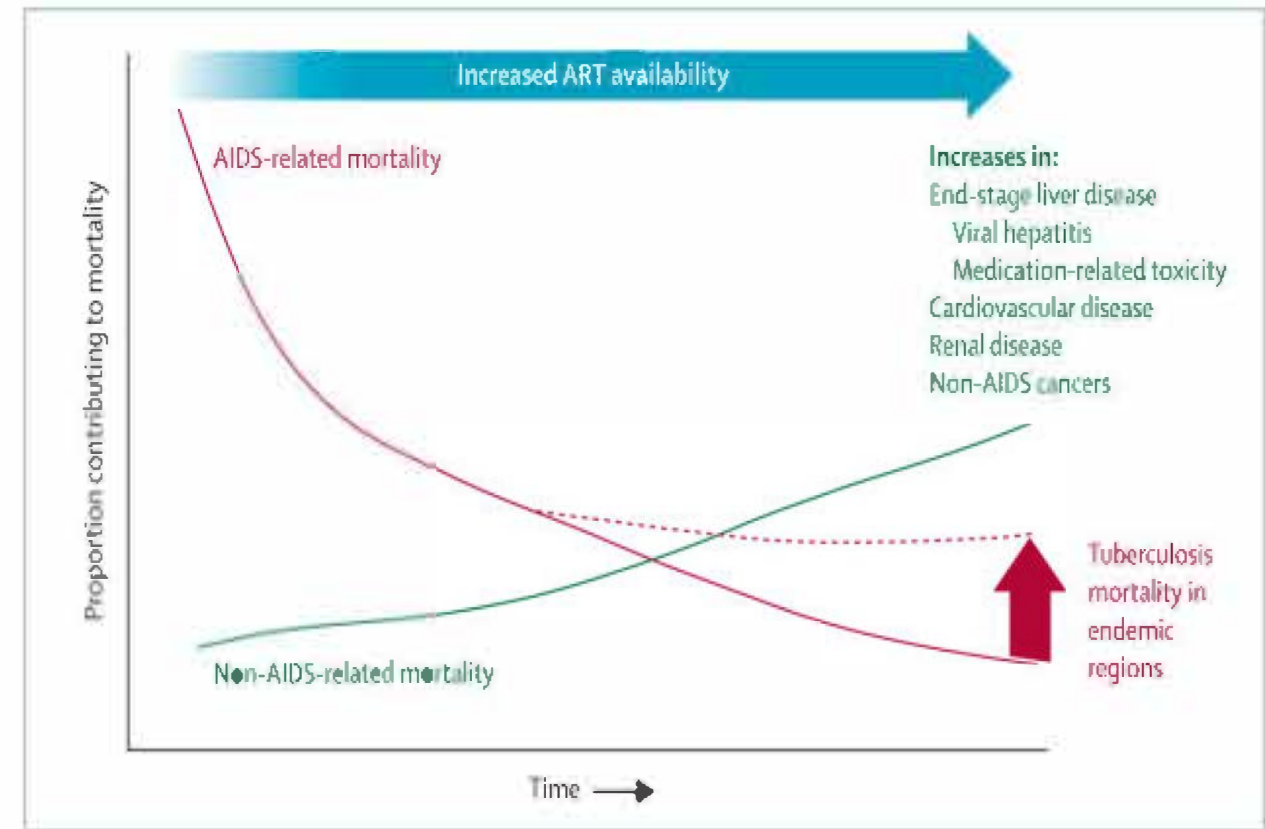
Source: [Van Handel et al., J Acquir Immune Defic Syndr. 2016](#)

Estimates of HIV increases in IDU are from local newspapers (search Volkow et al., 2019)

# Medical Comorbidity Common Among HIV+ People Using Drugs

## Common Comorbidities Among PLWH and Using Drugs

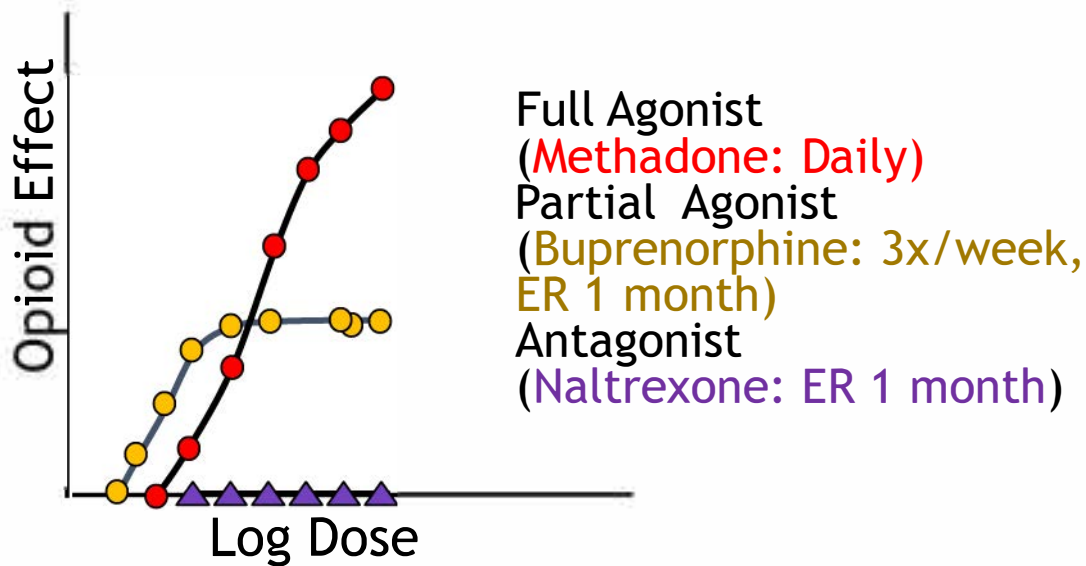
- CNS Disorders (HAND, Neuropathy, Cerebrovascular Accident, Depression)
- Pulmonary Disorders (Tuberculosis, Pneumonia, Septic Emboli)
- Cardiovascular Disorders (Endocarditis, MI)
- Liver Disorders (Hepatitis B and C)
- Skin and Soft Tissue Disorders (Cellulitis, Abscess, Necrotising Fasciitis)





# Addiction Can Be Treated

## Medications for Opioid Use Disorders (MOUD or MAT, OST)



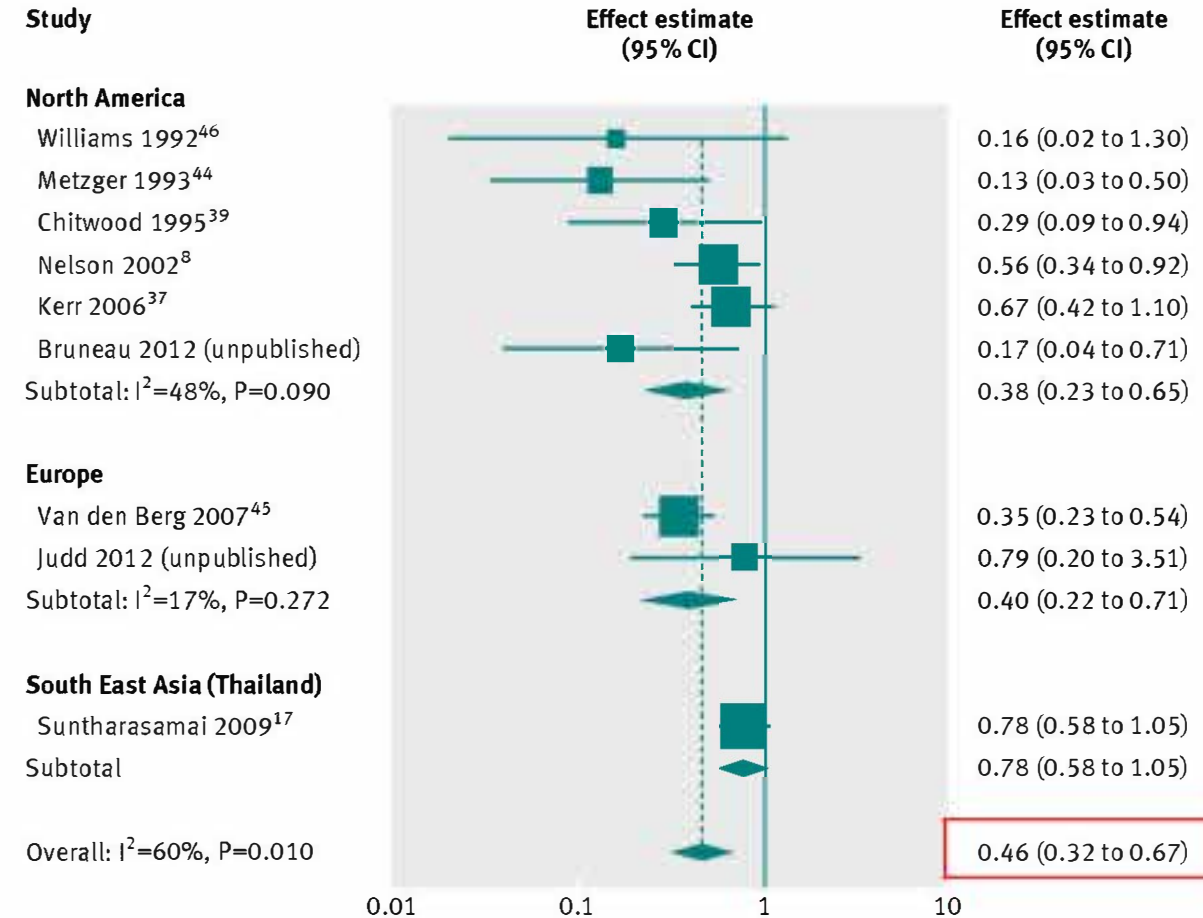
### DECREASES:

- Opioid use
- Opioid overdose deaths
- Criminal activity
- **HIV and HCV transmission**

### INCREASES:

- Social functioning
- **Retention in HIV treatment**
- **Improves HIV Outcomes**

## Impact of MOUD on HIV Transmission



**MOUD reduced HIV infections by 54%**

# Treating Opioid Use Disorders in PLWH Improves HIV Outcomes

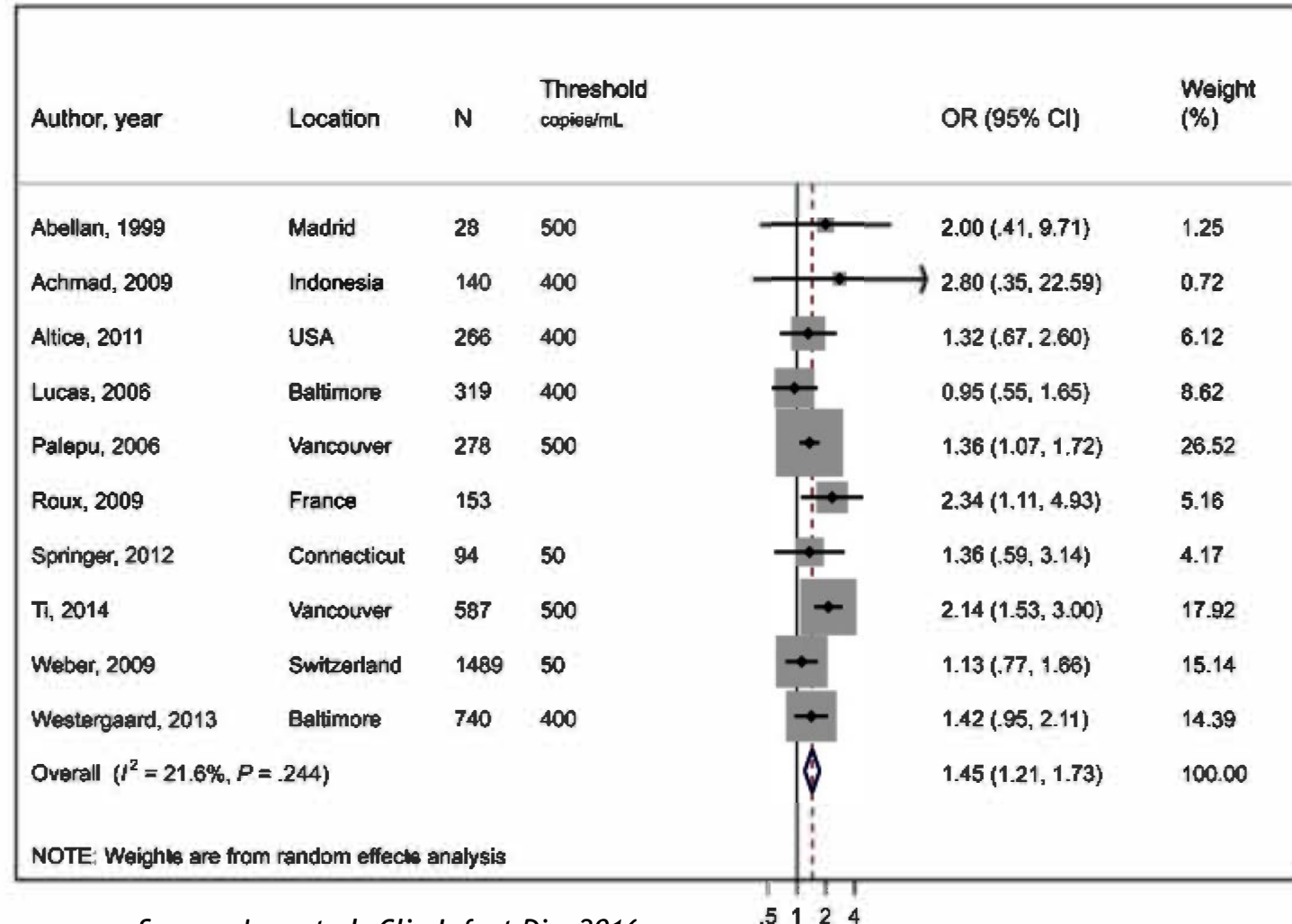
## Challenges:

- Treatment and retention in MOUD
- Treatment and retention in ART

## MOUD Improves uptake/retention in ART

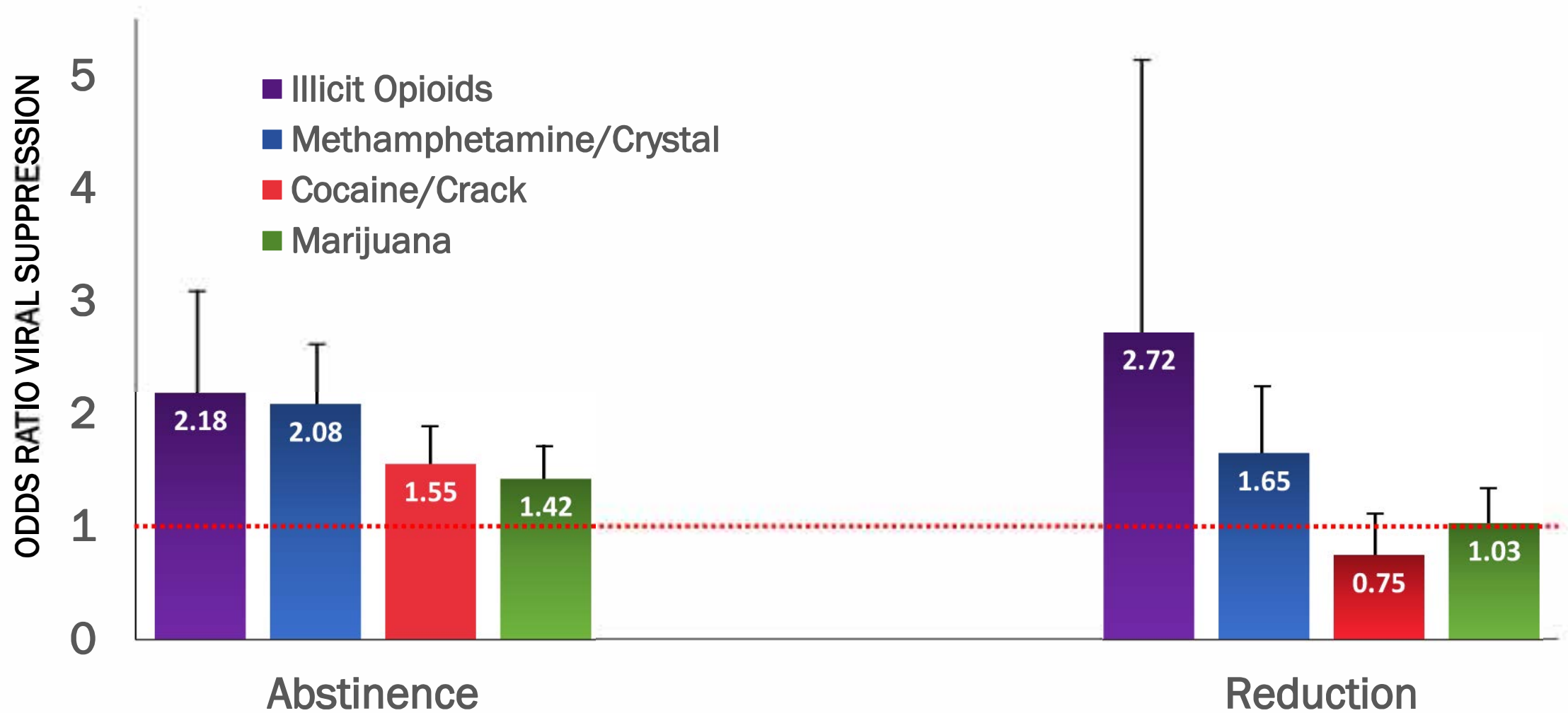
- 69% increased recruitment to ART
- Two-fold increase in ART adherence
- 23% decrease in odds of attrition
- 45% increase in odds of plasma viral suppression (VS)

## Odds of Viral Suppression for HIV+ on MOUD



Source: Lou et al. Clin Infect Dis. 2016

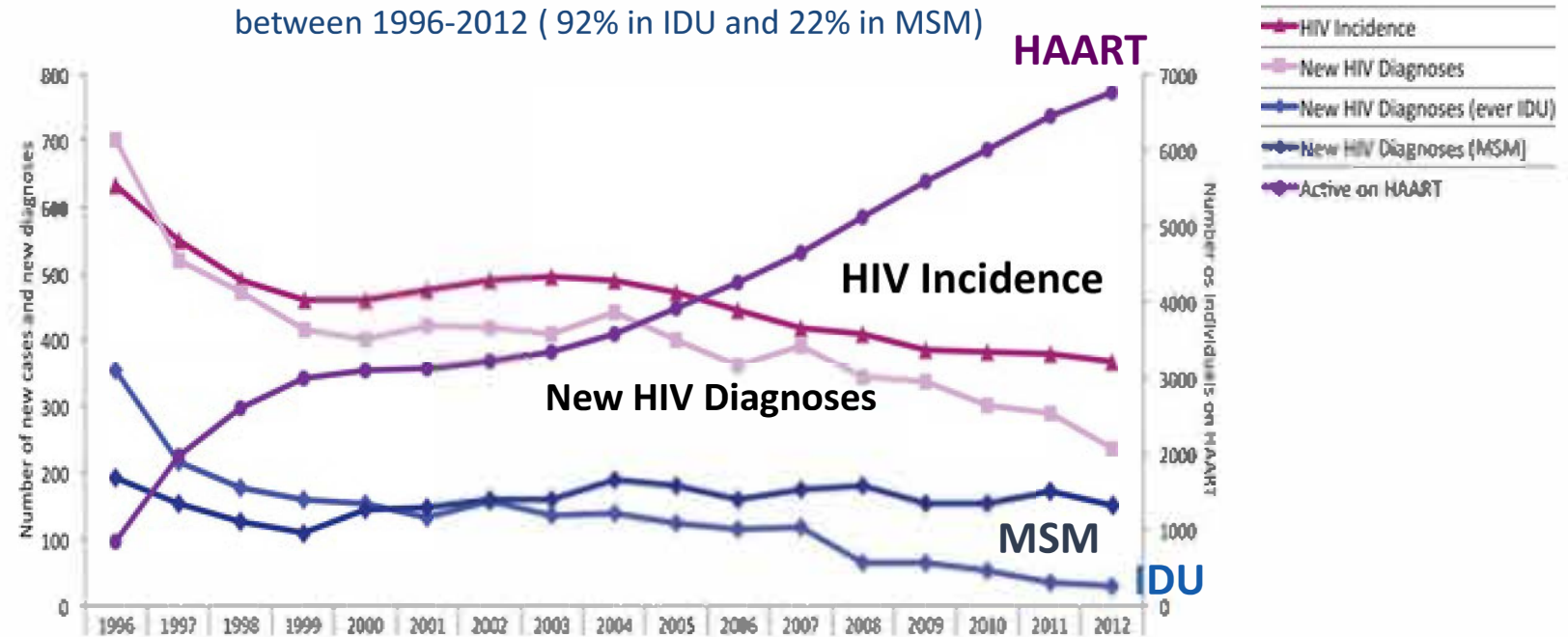
# Reduced Use Associated with Viral Suppression



# HAART as HIV Prevention: Including IDU

## HIV epidemic indicators for BC

Expansion of HAART was associated with decreases in new HIV diagnoses between 1996-2012 ( 92% in IDU and 22% in MSM)

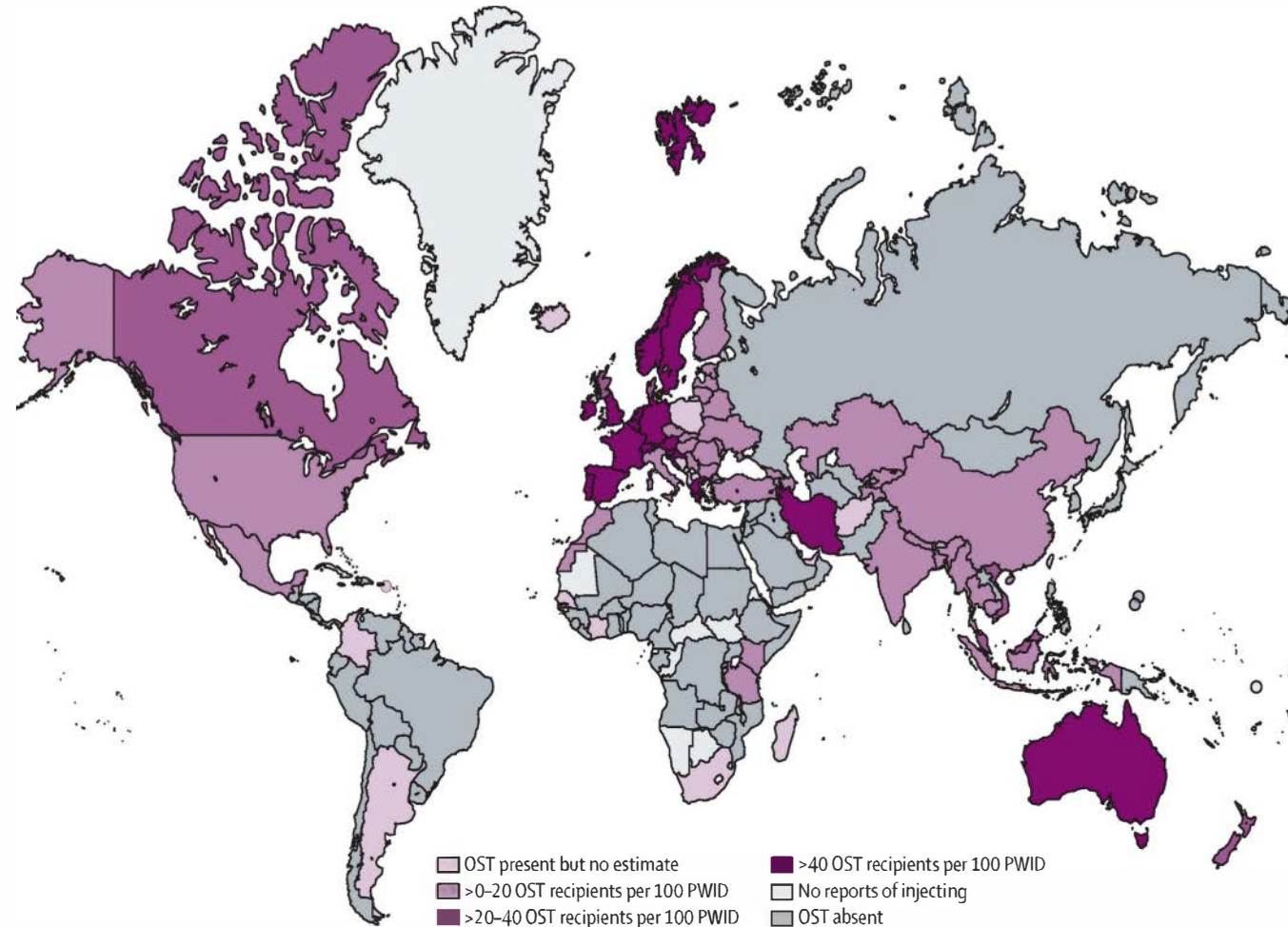


### Facilitate expansion and adherence to HAART among IDU

- Enhanced HIV screening
- Low threshold HAART treatment facilities
- Wide availability of needle and syringe programs,
- Extensive MOUD

# Medications for OUD are Highly Underutilized

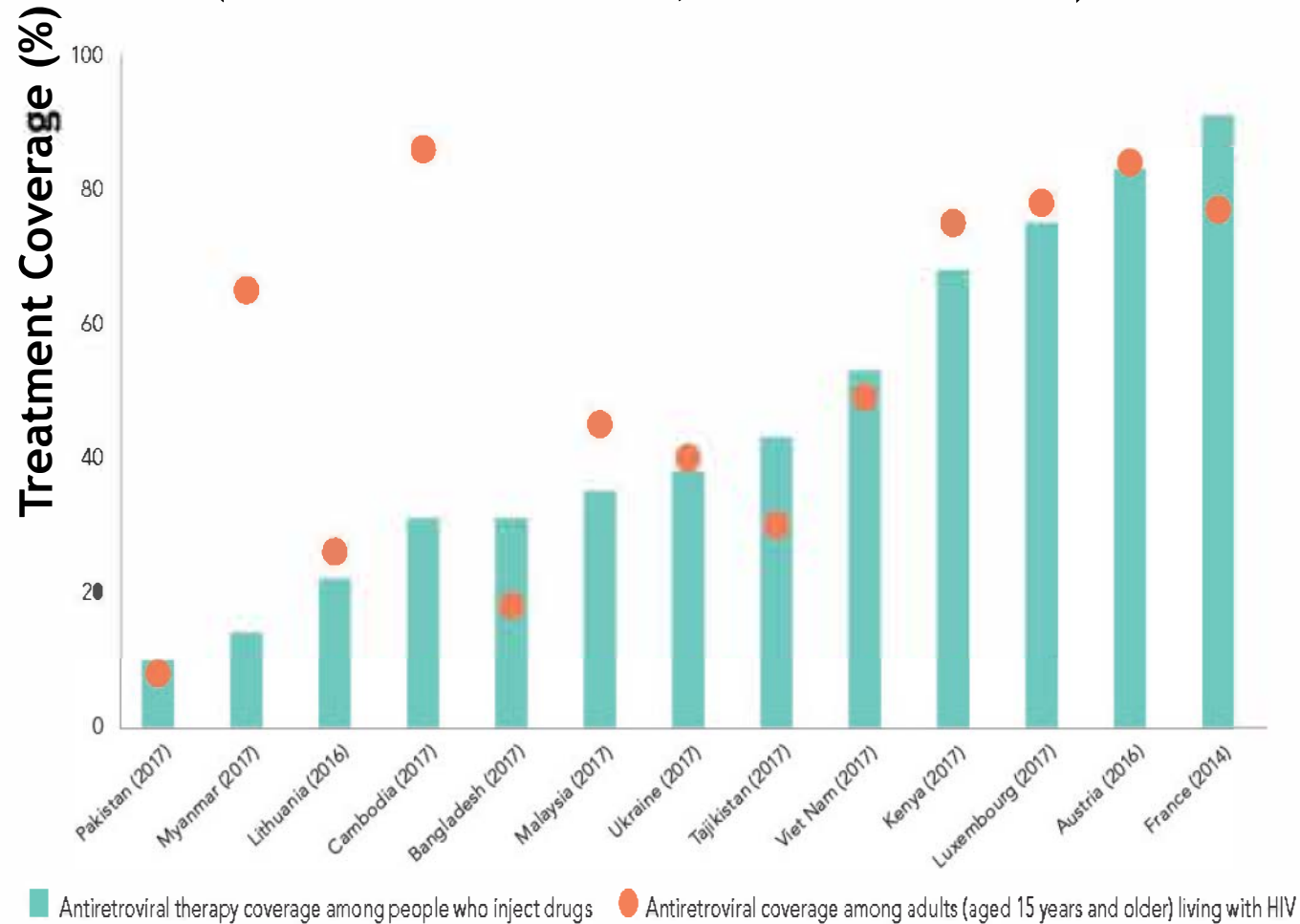
## MOUD Coverage among PWID



Source: Larney S et al. *Lancet Global Health* 2017

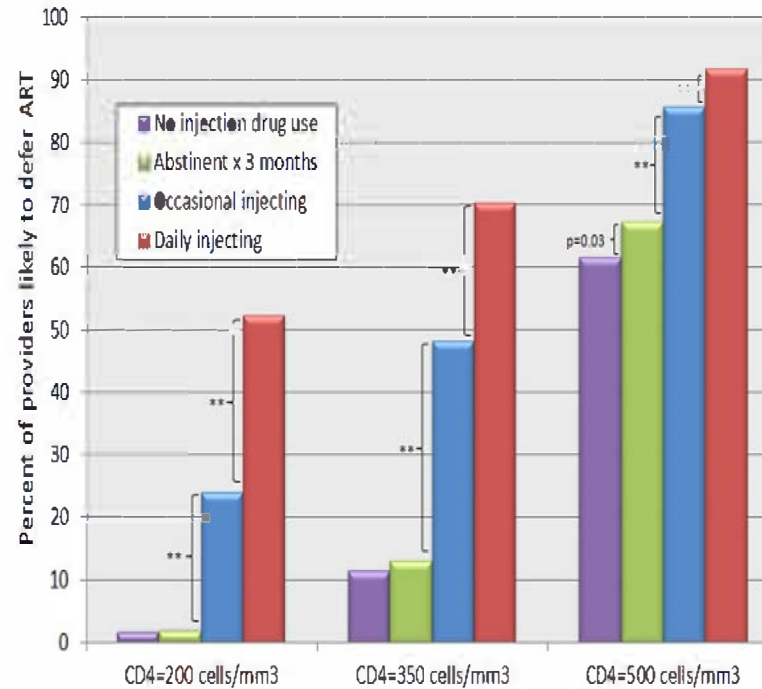
# Globally Gaps in Receipt of ART for HIV+ IDUs

## HIV Treatment Coverage (UNAIDS 2014-2017, 2018 Estimates)

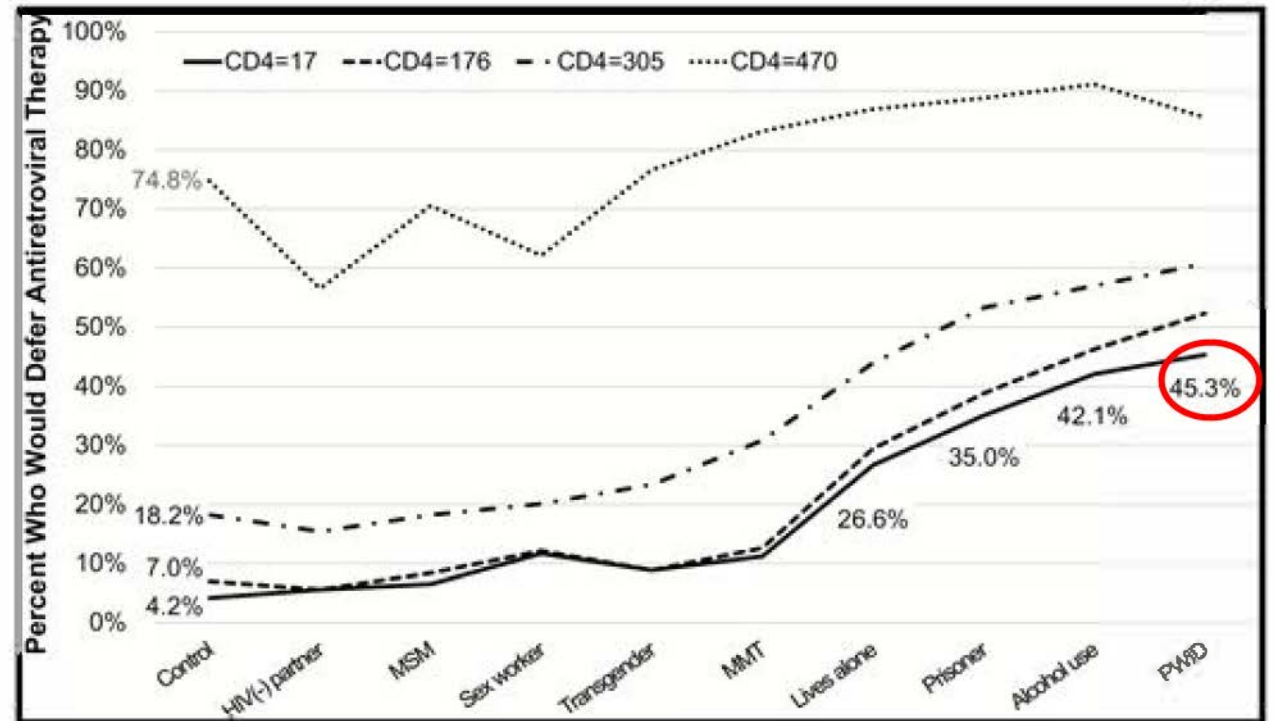


# Provider Stigma Persists

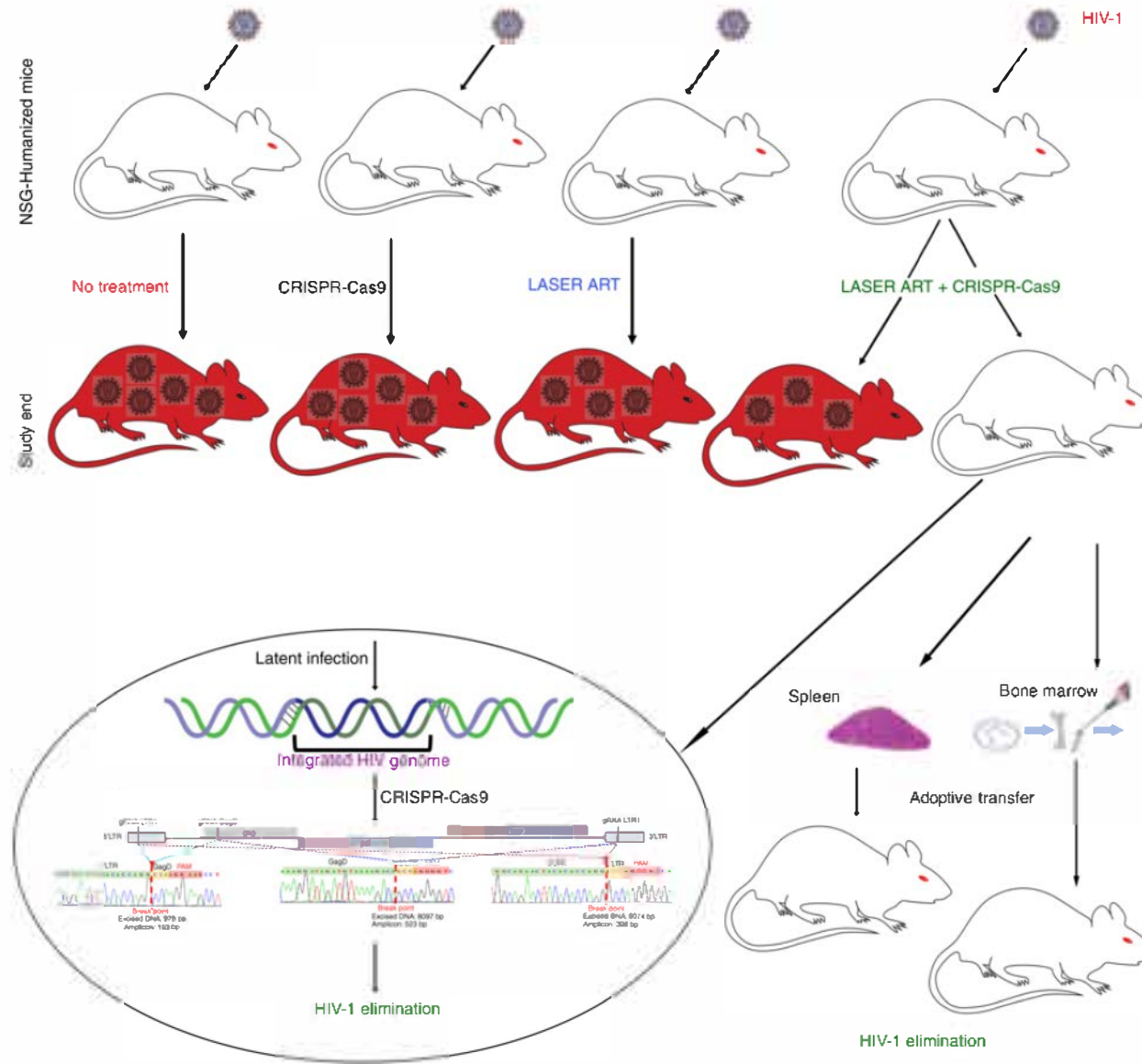
**% Providers Who Would Defer ART By CD4+ Count and IDU status**



**ART Delayed for PWID with Advanced HIV**



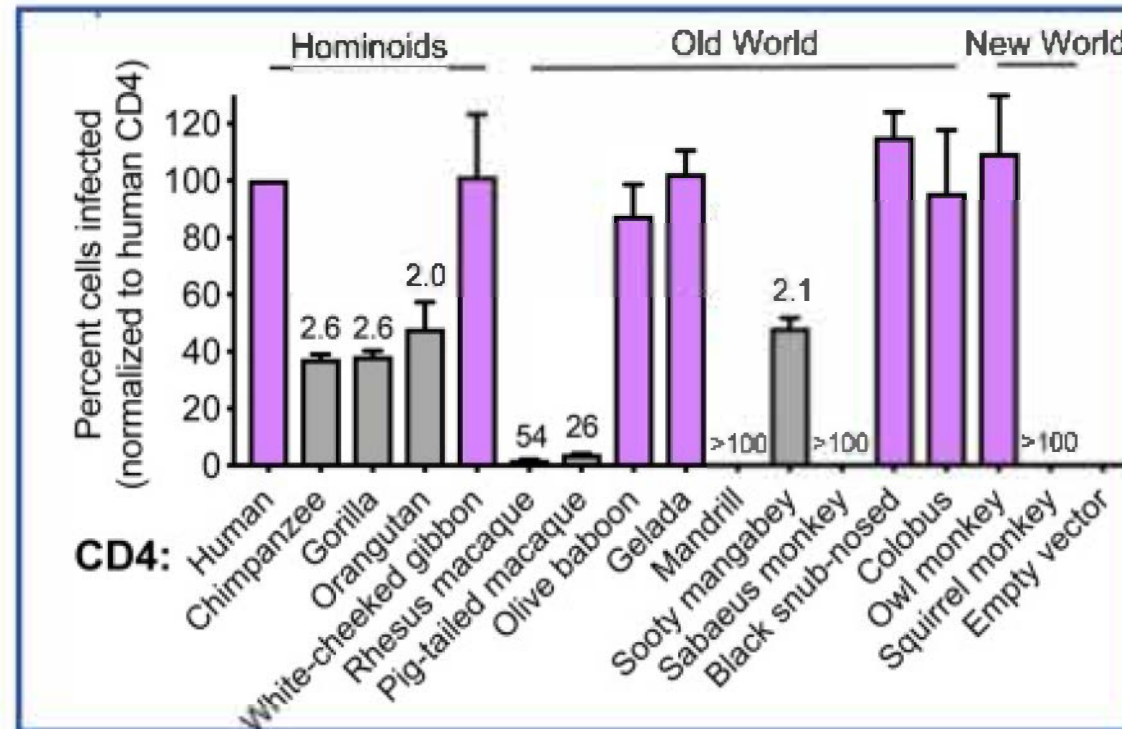
# NIDA HIV Cure Research: Eliminating HIV-1





# In search of a Primate model that supports HIV-1 infection

Some primate species encode a CD4 that functions as an entry receptor for an early isolate of HIV-1



# Innovators:

Julio Montaner: *Seek and Treat for Optimal Outcomes and Prevention in HIV/AIDS in IDU*



Sara Sawyer: *Hunting the HIV Unicorn: Better primates Models for HIV*



Sunil Suhas Solomon: *Reaching the Hardest of the Hard-to-Reach*



# Priority Area 1: Prevent new infections and transmission of HIV among people who use drugs and their sexual and/or injection partners

## Primary Prevention

Preventing HIV acquisition in people using drugs and their sexual and injecting partners

- Syringe Service Programs
- Pre-(PrEP) and Post-Exposure Prophylaxis (PEP) including Long-acting PrEP
- Health Education
- Risk reduction counseling

## Secondary Prevention

Prevent transmission by treating PLWH who use and misuse drugs to achieve sustained viral remission

- Linkage to testing (HIV/HCV/STI)
- Linkage to care (Immediate initiation of ART and Medications for Opioid Use Disorder)
- Recovery support and Partner services
- Retention and reengagement in care

## Structural

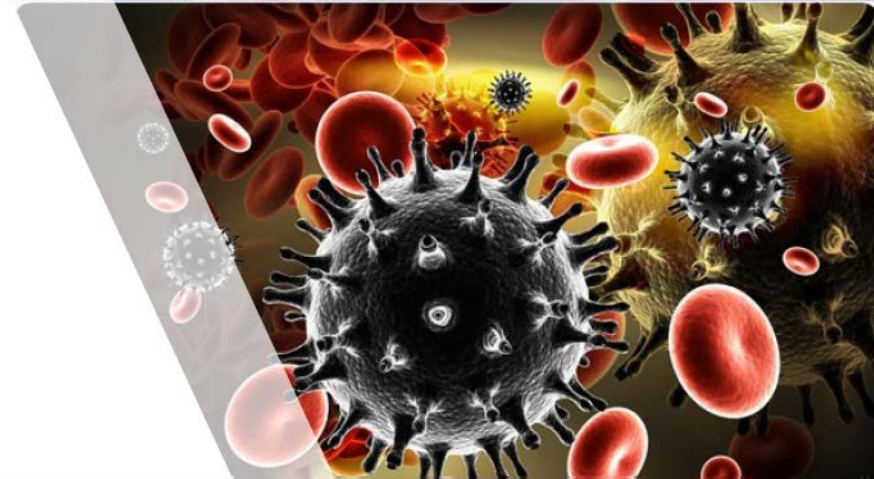
Improving treatment systems

- Provider Stigma
- Integrated Care



## Priority Area 2: Increase understanding of etiology, pathogenesis, spread, and persistence of HIV/AIDS among people who use drugs

- Assess the role of drug use in HIV infection and pathology in the central nervous system.
- Determine how drug use or substance use therapies interact with HIV and HAART to affect inflammation and immune responses.
- Elucidate mechanisms by which drug use affects HIV latency
- Use basic science findings to guide therapeutic strategies



## Priority Area 3: Address comorbidities and improve health outcomes among people living with HIV who use drugs

- Identify common underlying mechanistic substrates for neurological comorbidities
- Understand interactions of drug use, HIV/AIDS, HCV, and medications used in treatment
- Elucidate mechanisms by which drug use affects clinical outcomes in HIV including progression and mortality
- Develop integrated models to address SUDs, HIV, HCV, and other comorbidities in multiple healthcare and community settings

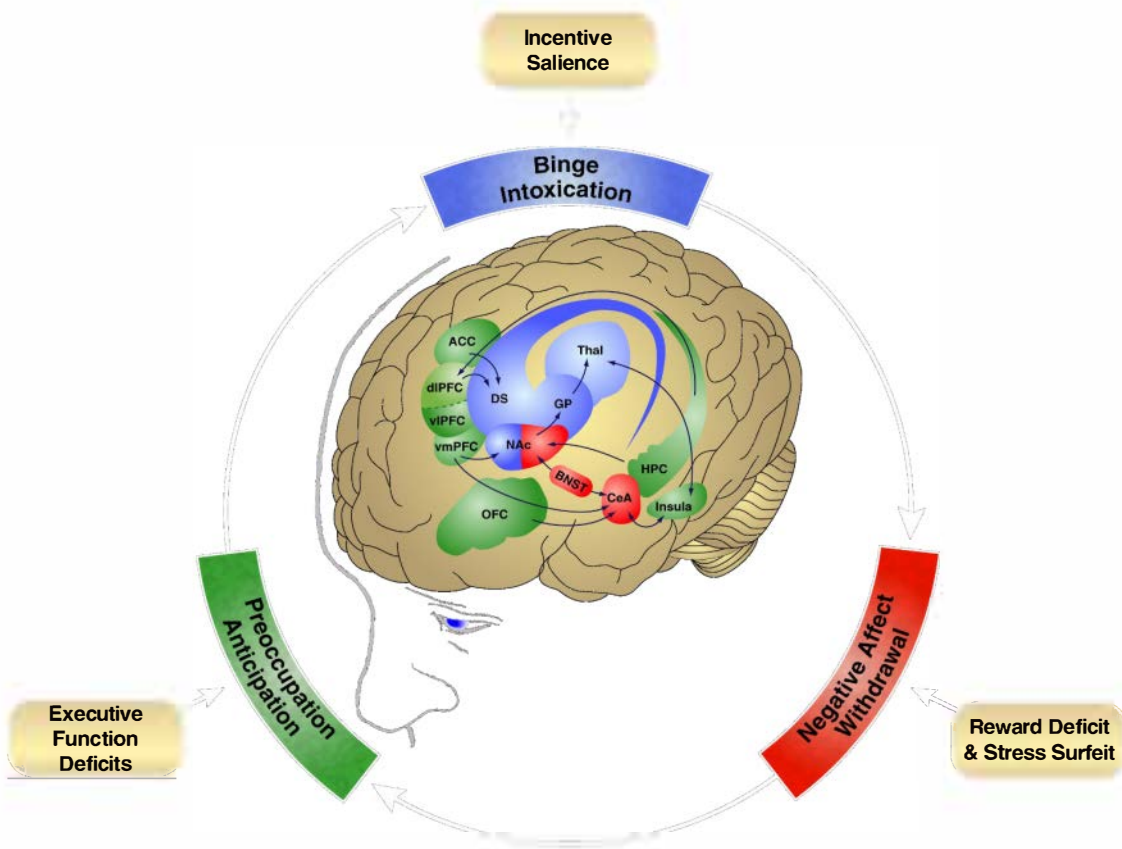


## Priority Area 4. Accelerate scientific discoveries in HIV/AIDS and substance use research.

- Enhance the pace of translational process by supporting innovation and team science.
- Leverage big data
- Training of the next generation of basic and clinical researchers



# Ending the Epidemic: Supporting Science to Address Substance Use and HIV



Ending  
the  
HIV  
Epidemic

**GOAL:**

75%  
reduction  
in new HIV  
infections  
in 5 years  
and at least  
90%  
reduction  
in 10 years.



HHS Has Launched A New Initiative to End the HIV Epidemic in America

	<b>Diagnose</b> all people with HIV as early as possible after infection
	<b>Treat</b> the infection rapidly and effectively to achieve sustained viral suppression
	<b>Protect</b> people at risk for HIV using potent and proven prevention interventions, including medication that can prevent HIV
	<b>Respond</b> rapidly to detect and respond to growing HIV clusters and prevent new HIV infections
	<b>HIV HealthForce</b> will establish elimination teams in each jurisdiction, to ensure the success of the initiative

# Thank You and Discussion